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P015171GB

2. Patent application number
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0221179.5

13SEP02 E747907-1 D02246
1/7700 0.00-0221179.5

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

INTELLPROP LIMITED
PO BOX 626
NATIONAL WESTMINSTER HOUSE
LE TRUCHOT ST PETER PORT
GUERNSEY

Patents ADP number *(if you know it)*

79005330001

If the applicant is a corporate body, give the country/state of its incorporation

A GUERNSEY COMPANY

4. Title of the invention

TELECOMMUNICATIONS SERVICES APPARATUS

5. Name of your agent *(if you have one)*

D Young & Co

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

21 New Fetter Lane
London
EC4A 1DA

Patents ADP number *(if you know it)*

59006

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and *(if you know it)* the or each application number

Country	Priority application number *(if you know it)*	Date of filing *(day month year)*

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application	Date of filing *(day month year)*

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? Answer 'Yes' if:

a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.
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0046998 13-Sep-02 03:39:

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Continuation sheets of this form	NONE
Description	11
Claim(s)	0
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Priority documents	0
Translations of priority documents	0
Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	2
Request for preliminary examination and search *(Patents Form 9/77)*	0
Request for substantive examination *(Patents Form 10/77)*	0
Any other documents *(please specify)*	Facsimile Letter Dated 13 September 2002

11. I/We request the grant of a patent on the basis of this application.

Signature D. Young & Co. Date 13 September 2002

D Young & Co (Agents for the Applicants)

12. Name and daytime telephone number of person to contact in the United Kingdom — Adam Pilch — 023 8071 9500

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0046998 13 Sep 02 03

TELECOMMUNICATIONS SERVICES APPARATUS

Text Messaging is established as a popular and effective means of communication for users of mobile telephones. The Short Message Services (SMS) of the GSM mobile telephony system provide an example of such a text messaging facility, and support for the composition, transmission and reception of Short Messages is present in the majority of GSM mobile terminals. Text messaging requires alphanumeric entry using the standardised Man Machine Interface (MMI) of the mobile handset, and also requires that the message be addressed to the desired recipient. The destination address for the message may typically be specified either by entering a Mobile Station ISDN number (MSISDN) that is the mobile telephone number of the desired recipient, or by selecting an entry from the handset's address book that already has the desired MSISDN pre-programmed in. The address book normally provides the MSISDN by using alphanumeric look-up of a name.

The SMS mechanism was originally defined for mobile to mobile text messaging, but has been extended to permit communication between mobiles and fixed entities in the network known as SMS Hosts. SMS Hosts are typically used for receiving the results of SMS voting events, or transmitting messages such as football results in bulk to users who subscriber to a premium service for example. SMS Hosts are responsible for an increasing proportion of SMS traffic.

One of the features of SMS is that an identifier corresponding to the sender's identity is normally transmitted to the recipient. It may not be optionally withheld by the sender. Exceptions to this include certain specialised services which may be offered by an operator, such as chat or dating whereby an alternative or temporary CLI is presented to the recipient, permitting reply but obscuring the originator's identity. Apart from such exceptions, the Calling Line Identity (CLI) is normally sent and may be displayed in the form of an MSISDN, though most handsets will translate this to an alphanumeric name if there is a corresponding MSISDN entry in the handset's address book. This provides ease of recognition of the sender, without the recipient having to remember telephone numbers. The mobile CLI feature is analagous to the CLI facility

available on fixed networks. Another benefit of receiving CLI is that a reply to the message is more easily achieved, without having to explicitly specify the return address. The MMI for mobile handsets in GSM defines Reply as a standard feature.

-5- As an alternative to transmission of the CLI identifier as an MSISDN, the GSM system also supports the transmission of a short Alphanumeric value or name of up to 11 characters instead. Support for reception and correct display of an Alphanumeric CLI is almost universally available on recent mobile telephones. This facility is being used increasingly by SMS Hosts to brand the messages that are sent to subscribers. In most cases, telephone numbers associated with SMS Hosts or companies originating brand-related SMS traffic would not be pre-programmed into recipients' handsets. The CLI of such messages would therefore carry no value to the user in promoting or recognising the identity of the message source. By using an alphanumeric CLI (such as 'Coca-Cola' or 'Amex') the user is immediately able to recognise the source, instead of receiving a message from an unrecognised number. In many cases, handsets are also able to originate messages with an alphanumeric CLI, and as services that make use of alphanumeric addresses increase in popularity it is likely that handset manufacturers will also improve the MMI in this area.

Prior art allows a mobile subscriber to send a text message from a mobile handset and have the message delivered as an email to a specified email address. However the syntax for specifying the email address on the mobile handset is cumbersome and slow, and hence the facility when offered by a network is relatively little used. A further disadvantage of this arrangement is that the user must know in advance the desired destination email address. Although the domain name of many companies can be guessed, the complete email address of a company department that is able to handle messages or queries sent by email is generally not guessable.

An additional complexity of such SMS to email services is that the reply path requires a correlation mechanism. When an message is originated from an email address and delivered to a mobile telephone, it is desirable that the mobile user should be able to reply to the sender using the SMS Reply function of the handset's MML To do this the

CLI field of the original message delivered to the handset must contain a valid reply address. Since this can be either an MSISDN number or an 11 character alphanumeric string, it is not generally possible to directly store an email address there. Consequently the network must maintain a correlation mechanism. A special CLI value is generated and sent to the mobile handset with the message. The network stores the CLI value and the corresponding sender's email address. When the user replies, the special CLI is used as the destination address. This address causes the text message to be directed to the network's SMS to email gateway, where the corresponding destination email address is looked up and substituted.

According to the invention there is provided apparatus for use with a mobile telephone network utilising a first message delivery function, the apparatus comprising routing means for identifying a characteristic in a message signal received in the telephone network, and message processing means for translating the destination address in the message signal into a destination address for a second message delivery function different from the first delivery function, the routing means being operable to send the message signal to the message processing means in response to identification of the characteristic in the message signal, and the message processing means including a non-personal translation table accessible to multiple subscribers for enabling translation from destination addresses in received message signals according to the first message delivery function to destination addresses for the second message delivery function.

Key advantages of the invention over the prior art are that readily memorable or guessable alphanumeric addresses of up to 11 characters may be used to send a text message to a company or brand name, without the user having to know a full email address or telephone number of the company. In the case of sending to a brand name, it is not even necessary to know the identity of the company. No correlation mechanism for replies is required in the network, and so no unique address range needs to be reserved for generating CLIs for this purpose. The invention provides a direct link between brand name owners and the general public, allowing companies to

communicate directly with the public and to capture the CLIs of users who contact them or reply.

Referring to Figure 1, the user of a mobile telephone is connected to a mobile network via an MSC [1]. Short messages originated by the user pass through an SMS router [2] or equivalent means for diverting certain messages. The SMS Router identifies certain messages according to their characteristics, and routes these messages to a Message Processing means [3]. Other messages follow the normal path through the network and are delivered either directly to a destination MSC [7] or via an SMSC [4] for store and forward delivery. The message processing means is operable to generate a response message, which is delivered back to the originator via the SMS Router. If immediate delivery of the response is not possible, the message may be passed from the SMS Router to the SMSC for store and forward delivery. Alternatively the message processing means is operable to send the processed message via an email gateway [5] where the message is converted to email format and delivered via an email network to the recipient email system [6]. The recipient email system may generate an email reply, in which case this is delivered via the email gateway, which converts the reply to SMS format and passes it to the Message Processing means. The reply is then delivered to the originator either directly via the SMS Router, or by a store and forward method using the SMSC.

The operation of the invention is now described in detail by means of a specific example. The example uses the invention to allow a mobile network subscriber to send a message to a brand identity without knowing any telephone number or email address relating to the company that owns the brand.

In this example a mobile subscriber, perhaps prompted by advertising or a desire for current information, wishes to send a message to a company that manufactures a product called <BRANDX>. The company name is <COMPANYX> but the user is unaware of this. The user composes his message, which consists of the text <CURRENT COMPETITIONS?> and sends it to the alphanumeric address <BRANDX>. Only a small minority of major brand names are more than 11

characters long, but if this were the case the alphanumeric address could be truncated to be 11 characters long. The user's MSISDN CLI is referred to as <USERCLI> in the following text.

The message properties at this point are—

Originating address	<USERCLI>
Destination address	<BRANDX>
Content	< CURRENT COMPETITIONS?>
Format	Mobile originated SMS

The message is sent to the network via the MSC [1] and arrives at the SMS Router [2]. The router examines characteristics of the message and identifies this message as one of a class of messages that is to be directed to the Message Processing means. The characteristics that identify the message as such may be for example having an alphanumeric destination address, although other characteristics may be taken into account. Local intelligence in the SMS Router or equivalent function may be used to make this decision, or alternatively a centralised resource such as a Service Control Point may be queried by the SMS Router.

The message is then passed to the Message Processing means [3]. The Message Processing means determines that in this case the particular destination address indicates that the message is to be delivered by email to <COMPANYX>. This determination may be made by means of a lookup table, database or other means. The Message Processing means also determines the new origination address and destination email address to be used.

A new origination address is required in order to ensure that any reply returns via a desired route, which in this example is back through the Message Processing means. In order to avoid destroying the original destination address <BRANDX>, the Message processing means also stores this in some way. In this example the new origination address is created by including the original destination address along with an email domain name corresponding to the email gateway, forming the address

<USERCLI>.<BRANDX>@<EMAILGATEWAYDOMAIN.COM>
Many other suitable forms of address are possible.

A new destination address is required in order to deliver the message to an appropriate email address. Characteristics of the desired destination address may be looked up in a table or database using the original destination address <BRANDX>. In this example the new destination address is <SALES@COMPANYX.COM>.

The original destination address <BRANDX> may be prepended to the message content for the convenience of the recipient. The message is now passed to the email gateway [5] where it is converted to email format and delivered via an email network to the recipient email system [6].

The message properties at this point are—

Originating address	<USERCLI>.<BRANDX>@<EMAILGATEWAYDOMAIN.COM>
Destination address	<SALES@COMPANYX.COM>
Content	<BRANDX> <CURRENT COMPETITIONS?>
Format	Email

The primary purpose of the invention has now been demonstrated, which is to allow a user to deliver a message to an appropriate email address using only a text message and a brand name, and with no knowledge of telephone numbers, company names or email addresses being required. Furthermore, the CLI of the sender is now available to <COMPANYX>.

The secondary purpose of the invention is to permit a reply, or origination, path from organisations such as <COMPANYX> to mobile subscribers. Using a reply to the previous case as an example, this works as follows.

An email reply consisting of text <BRANDX COMPETITION, PLEASE REPLY WITH YOUR FULL NAME TO ENTER> is generated at <COMPANYX>. This may then be sent using the normal reply facilities of standard email systems, whereby the origination address of a message is automatically used as the default reply address.

The reply properties at this point are—

Originating address	<SALES@COMPANYX.COM>
Destination address	<USERCLI>.<BRANDX>@<EMAILGATEWAYDOMAIN.COM>
Content	<BRANDX COMPETITION, PLEASE REPLY WITH YOUR FUL NAME TO ENTER>
Format	Email

This message arrives at the email gateway [5], is converted to SMS format and passed to the Message Processing means [3]. The message addresses are then further transformed to be appropriate for the mobile telephone network, and to permit further reply by the user.

The user's telephone number and the brand name are extracted from the email destination address.

The reply properties at this point are—

Originating address	<BRANDX>
Destination address	<USERCLI>
Content	<BRANDX COMPETITION, PLEASE REPLY WITH YOUR FULL NAME TO ENTER>
Format	SMS

<BRANDX> is returned as the CLI of the reply, so that the user can easily send a further response.

An alternative embodiment of the invention is now described. This embodiment is achieves substantially the same results as the previous example, except that the means of delivery of the message from the apparatus to the first recipient uses a different transport mechanism from the previous example, which used email.

In this second example a mobile subscriber wishes to send a message to a company that manufactures a product called <BRANDZ>. The company name is <COMPANYZ> but the user is unaware of this. The user composes his message, which consists of the text <CURRENT COMPETITIONS?> and sends it to the alphanumeric address <BRANDZ>.

The message properties at this point are—

Originating address	<USERCLI>
Destination address	<BRANDZ>
Content	< CURRENT COMPETITIONS?>
Format	Mobile originated SMS

Referring to Figure 2, the message is sent to the network via the MSC [1] and arrives at the SMS Router [2]. The router examines characteristics of the message and identifies this message as one of a class of messages that is to be directed to the Message Processing means.

The message is then passed to the Message Processing means [3]. The Message Processing means determines that in this case the particular destination address indicates that the message is to be delivered to <COMPANYZ>. This determination may be made by means of a lookup table, database or other means. The Message Processing means also determines the new origination address and destination address to be used. In this case the Message Processing means determines that the preferred path for delivery is via a communication link to the destination company. Examples of this arrangement may arise from commercial agreements between networks and corporate customers for example, whereby dedicated communication links are set up

between the respective organisations for efficient transfer of information. Examples of such communication links include TCP/IP connections, leased lines, dial-up connections and X.25 links. The communication links may be permanent or connected on demand.

In this example, a TCP/IP link is established between the apparatus and the destination company, and the message is formed and transmitted over this link, although other implementations are possible. Information corresponding to the origination address and the original destination address are included in the message protocol.

A new destination TCP/IP address is required in order to deliver the message to the correct destination. Characteristics of the desired destination address may be looked up in a table or database using the original destination address <BRANDZ>. In this example the new destination address is a TCP/IP address.

The original destination address <BRANDZ> may be included in the message content for the convenience of the recipient. The message is now passed to the Dedicated Connection interface [5] where it is transmitted to the Recipient message system [6].

The message properties at this point are—

Originating address	TCP/IP address of the apparatus
Destination address	TCP/IP address of COMPANYZ
Content includes message	<BRANDZ> < CURRENT COMPETITIONS?>
Format	A TCP/IP based protocol

A reply message containing the text <BRANDZ COMPETITION, PLEASE REPLY WITH YOUR FULL NAME TO ENTER> is generated at <COMPANYZ>. This may then be sent back to the apparatus using the address provided in the original message, and including in the protocol the originating user's CLI, and the original destination address <BRANDZ>.

The reply properties at this point are—

Originating address	TCP/IP address of COMPANYZ
Destination address	TCP/IP address of the apparatus
Message protocol includes	<BRANDZ> <USERCLI> <BRANDZ COMPETITION, PLEASE REPLY WITH YOUR FULL NAME TO ENTER>
Format	A TCP/IP based protocol

This message arrives at the Dedicated Connection interface [5], is converted to SMS format and passed to the Message Processing means [3]. The message addresses are then further transformed to be appropriate for the mobile telephone network, and to permit further reply by the user.

The user's telephone number and the brand name are extracted from the message.

The reply properties at this point are—

Originating address	<BRANDZ>
Destination address	<USERCLI>
Content	<BRANDZ COMPETITION, PLEASE REPLY WITH YOUR FULL NAME TO ENTER>
Format	SMS

<BRANDZ> is returned as the CLI of the reply, so that the user can easily send a further response.

Security issues are important for an email reply path, as with all systems that allow SMS messages to be initiated from the Internet. It is desirable for the mobile network

operator to be able authenticate traffic with a source address indicating for example <COMPANYX> as genuinely originating from there. It is also desirable to be able to block unauthorised traffic from the Internet from obtaining access to mobile subscribers via the apparatus. Known prior art techniques such as Digital signatures can be employed to provide the desired level of security. Using such techniques the mobile network is able to control and police the access to the apparatus. If desired, traffic arriving at the gateway may be restricted to replies to mobile originated messages, or alternatively, particular destinations may be allowed also to originate messages to subscribers.

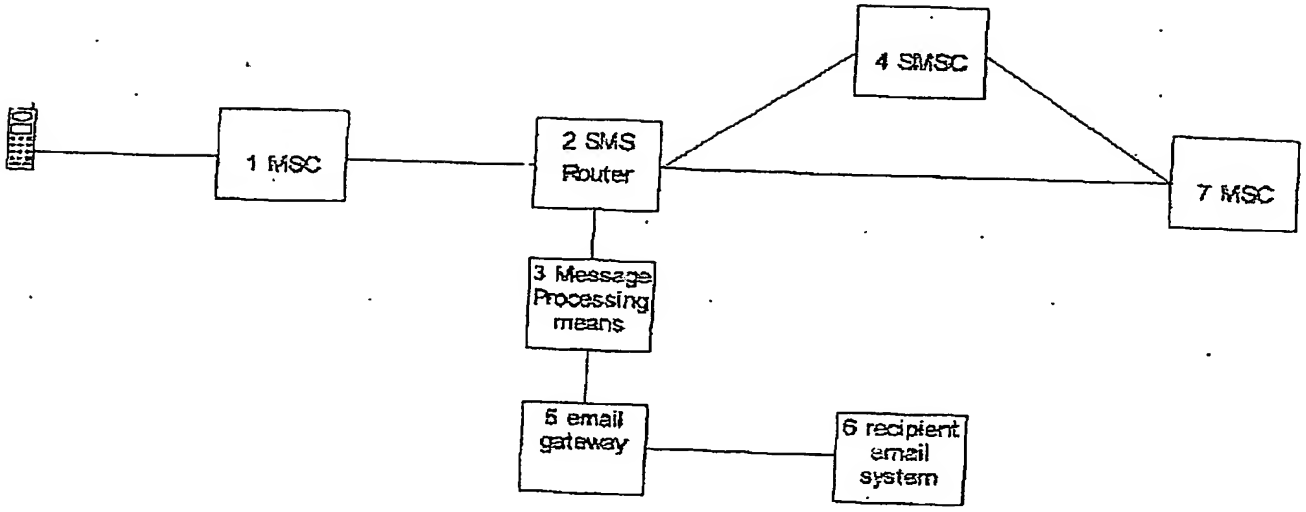
4 SMSC
1 MSC
2 SMS Router
7 MSC
3 Message Processing means
5 email gateway
6 recipient email system

Figure 1

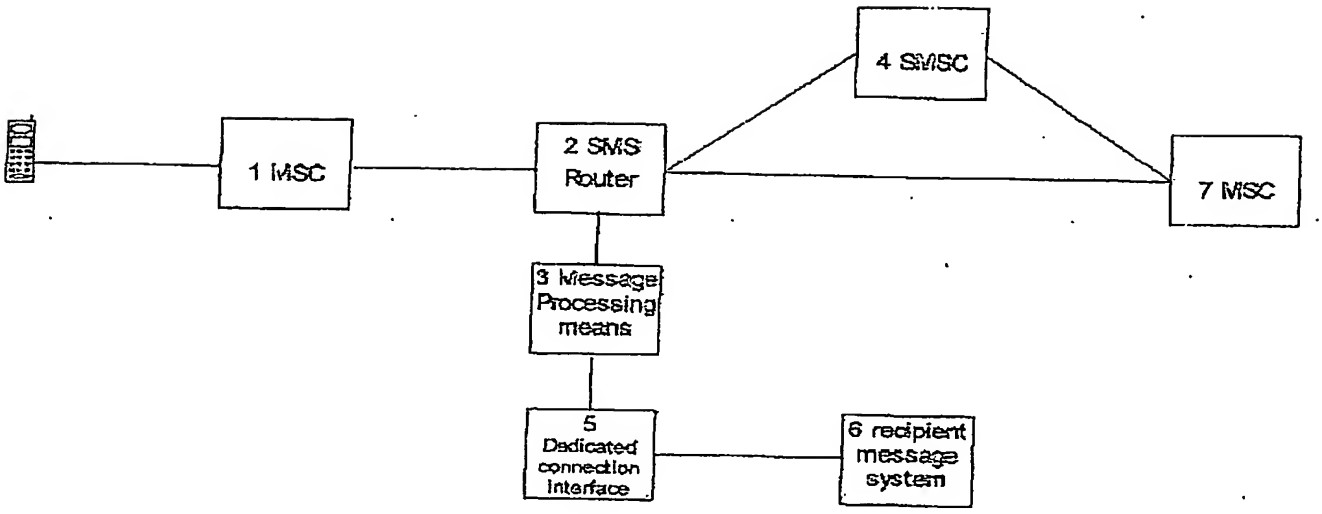
4 SMSC
1 MSC
2 SMS Router
7 MSC
3 Message Processing means
5 Dedicated connection interface
6 recipient message system

Figure 2

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